

GROUP III NITRIDE SEMICONDUCTOR LIGHT EMITTING DEVICE

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Inventor(s): ASAI MAKOTO;; SHIBATA NAOKI;; KOIDE NORIKATSU
Applicant(s): TOYODA GOSEI CO LTD
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Abstract

PROBLEM TO BE SOLVED: To improve insulation breakdown characteristics against the electrostatic voltage in the forward direction.

SOLUTION: In a light emitting device 10 comprising an n-conductivity type high carrier-concentration n<+> layer 3, a light emitting layer 5 and p-conductivity type p layer 61 each formed of a group III nitride semiconductor, there is provided an n layer 4 formed of an n-conductivity type group III nitride semiconductor having an electron concentration lower than those of the light emitting layer 5 and the high carrier-concentration n<+> layer 3. The n layer 4 is made of an n-conductivity type group III nitride semiconductor having a thickness of 500 to 6000 \AA and a carrier concentration of 5×10^{16} to $5 \times 10^{17} / \text{cm}^3$. Due to the presence of the n layer 4, if electrostatic voltage in the forward direction is applied, electric fields of the layers 61, 5, 4 and 3 and those among the layers are made small and withstand electrostatic voltage in the forward direction is increased. A withstand electrostatic voltage of 500V in the forward direction is obtained. This value is five times as large as that of the withstand electrostatic voltage in the forward direction of a light emitting device of a conventional structure.

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